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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/821,387

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Seok Jin Han

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EXAMINER

CHOW, YUK

ART UNIT

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2629

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/821,387	Applicant(s) HAN ET AL.	
	Examiner YUK CHOW	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01/02/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/02/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1, 2, 4-6, and 9-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Rho et al.(US 2004/0169807).**

As to **claim 1**, Rho discloses a method of subpixel rendering input image data onto a display panel, said input image data comprises image data formatted for a first subpixel layout and wherein said display panel comprises a second subpixel layout further comprising a repeating grouping of a plurality of primary colored subpixels and said second subpixel layout is different from said first subpixel layout (see Fig. 4A, 5A), the steps of said method comprising:

subpixel rendering input image data that is input at a first clock rate (see [0178] CPV);

outputting subpixel rendered data to said display panel at a second clock rate ([0178] HCLK).

As to **claim 2**, Rho discloses a method of Claim 1 wherein said subpixel repeating group further comprises at least one column in which more than one color primary comprises said column (See Fig. 4A, first column has more than one primary color).

As to **claim 4**, Rho discloses a method of Claim 1 wherein said first clock rate and said second clock rate are different (see [0177]-[0179]).

As to **claim 5**, Rho discloses a method of Claim 1 wherein said input image data comprises more subpixel data sets (Fig. 4A)) for each image frame than said number of subpixel data set (Fig. 4B), less data) for each image frame for rendering on said display panel.

As to **claim 6**, Rho discloses a method of Claim 1 wherein said method further comprises the step of outputting a signal indicating valid output data to the display controller (see [0178] output enable signal OE).

As to **claim 9**, Rho discloses a method of Claim 6 wherein said output image data sent to the display controller does not comprise dummy image data (see Fig. 4A, Rho does not use dummy data).

As to **claim 10**, Rho discloses a method of Claim 6 wherein said first clock rate and said second clock rate are the same (see [0177], synchronization signal Hsync).

As to **claim 11**, Rho discloses a method of Claim 6 wherein said first clock rate and said second clock rate are different (See [0178], gate clock CPV and data clock HCLK).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 7, 8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rho in view of Park (US Patent 6,160,535).

As to **claim 3**, Rho discloses a method of Claim 1 above.

However, Rho does not teach wherein said first clock rate and said second clock rate are the same and dummy data is inserted into said outputted subpixel rendered data.

Park discloses a liquid crystal display wherein teach a dummy data (Fig. 4(D)).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use dummy data as in Park with method of subpixel rendering input image data of Rho, because dummy data is commonly use to buffer the data transmission path (see Park (Col. 6 line 61- Col. 7 line 9)).

As to **claim 7**, Rho discloses a method of subpixel rendering input image data onto a display panel, said input image data comprises image data formatted for a first subpixel layout and wherein said display panel comprises a second subpixel layout

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further comprising a repeating grouping of a plurality of primary colored subpixels and said second subpixel layout is different from said first subpixel layout, (see Fig. 4A, 5A)

the steps of said method comprising:

subpixel rendering input image data that is input at a first clock rate (see [0178] CPV);

outputting subpixel rendered data to said display panel at a second clock rate ([0178] HCLK).

However, Rho does not teach wherein the output image data is buffered.

Park discloses a liquid crystal display wherein teaches output image data is buffered (See Park Fig. 4(34)).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use buffer as in Park with Rho's method of subpixel rendering, because buffering is well known method to improve the video quality (see Park (Col. 2, lines 22-29)).

As to **claim 8**, Rho and Park discloses a method of Claim 7 wherein said subpixel repeating group further comprises at least one column in which more than one color primary comprises said column (See Rho Fig. 4A, first column has more than one primary color).

As to **Claim 14**, Rho discloses a system for rendering input image data formatted for a first colored subpixel layout onto a display panel comprising a second colored subpixel layout comprising a repeating group of colored subpixels and wherein

said first subpixel layout is different some said second subpixel layout (see Fig. 4A, 5A),
said system comprising:

a input means for accepting input image data formatted for said first colored subpixel layout (see Rho [0063]);

a subpixel rendering engine for remapping the input image data into output data formatted for said second colored subpixel layout (see Rho Fig. 6).

However, Rho does not teaches a channel formatter for effectively ordering said output data; and a means for outputting the data formatted by said channel formatter to said display.

Park discloses a liquid crystal display wherein teaches a channel formatter (see Park Fig. 5 and Col. 6 line 47 –Col. 7 line 9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use channel formatter as in Park with Rho's method of subpixel rendering, because channel formatter could be use to effectively data conversion in order to reduce power consumption (see Park (Col. 2, lines 22-29).

Claims 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rho and Park in further view of Furuhashi et al.(US Patent 6,340,970).

As to **claim 12**, Rho and Park disclose a method of subpixel rendering input image data onto a display panel, said input image data comprises image data formatted for a first subpixel layout and wherein said display panel comprises a second subpixel layout further comprising a repeating grouping of a plurality of primary colored subpixels

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and said second subpixel layout is different from said first subpixel layout (see Rho Fig.

4A, 5A), the steps of said method comprising:

outputting subpixel rendered data to said display panel in a format wherein dummy data (see Park (Fig. 4(D))) is inserted into the output data.

However, combination of Rho and Park do not teach subpixel rendering input image data that is input asynchronously.

Furuhashi discloses a liquid crystal display control device wherein teaches the output signal is asynchronous with the input signal (Col. 4 line 8-13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use asynchronous method as in Furuhashi into the method of subpixel rendering of Rho and Park, because this enables the output signal to have lower speed which suppressing deterioration of display (See Furuhashi Col. 2 line 1-6)

As to **claim 13**, Rho, Park and Furuhashi disclose a method of Claim 12 wherein said subpixel repeating group further comprises at least one column in which more than one color primary comprises said column (See Rho Fig. 4A, first column has more than one primary color).

Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rho and Park in further view of Murdoch et al. (US PG PUB No. US 2004/0263528 A1).

As to **claim 15**, Rho and Park discloses a system of claim 14 above.

However, Rho and Park does not teach a gamut mapping system for remapping the image data.

Murdoch teaches a gamut mapping technique [0036] to provide a method for assigning intensity values for all primary colors.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate gamut mapping technique of Murdoch's into LCD device of Park's because it provides a transformation that preserves color accuracy in the display system. This is an advantage over conventional mapping technique as in Park's.

As to claim 16, Rho and Park discloses a system of claim 14 wherein the channel formatter (see Park "data transmission paths", Col. 6 line 61-Col. 7 line 9) has formats said output data according to the number of channels available to the display controllers (see Park Fig. 4(3)).

As to claim 17, Rho and Park discloses a system of claim 16 wherein the channel formatter adds dummy image data (see Park Fig. 6(D)) to the valid output data set (see Park Fig. 6(R'n)).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUK CHOW whose telephone number is (571)270-1544. The examiner can normally be reached on 8-6 M-TH E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on 571 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Y. C./

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/Amare Mengistu/
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